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## LABORATORY BRED PRAWNS FROM NARAKKAL CULTURED IN SALT PAN RESERVOIRS AT TUTICORIN—A SUCCESS STORY\*

Rapid developments and fast changes are taking place in the field of prawn culture in India and abroad. Domestication of the culturable species of marine prawns, their induced maturation and spawning in captivity and mass production of stockable size of prawn seeds have become a reality in India chiefly due to the researches conducted at the Narakkal Prawn Culture Laboratory (NPCL) of the Central Marine Fisheries Research Institute. Establishment of a land-based maturation facility and development of

mass cultures of locally available live feed organisms—diatoms, rotifers and cladocerans—were the major contributory factors in achieving this break-through. As a result of these developments over one million prawn seeds, chiefly belonging to the Indian prawn *Penaeus indicus* were produced at the NPCL in the early half of 1980.

The prawn seeds produced at the NPCL were byproducts of the experiments conducted there and not products of a concerted production programme. Although most of these seeds were used in the Lab to

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Land programme of the Institute at the Vypeen Island and Quilon, some were supplied to the prawn Culturists at Goa and Tuticorin and also to the Calicut Research Centre of the CMFRI for experiments in the polythene lined ponds on the sandy beach of Calicut. The main objective of these supplies was to study the problems associated with long distance transport and to evaluate their growth and survival in different ecological conditions. A report on their growth and production in the polythene-lined ponds at Calicut is given elsewhere in this issue. The consignment sent to Tuticorin is dealt with below.

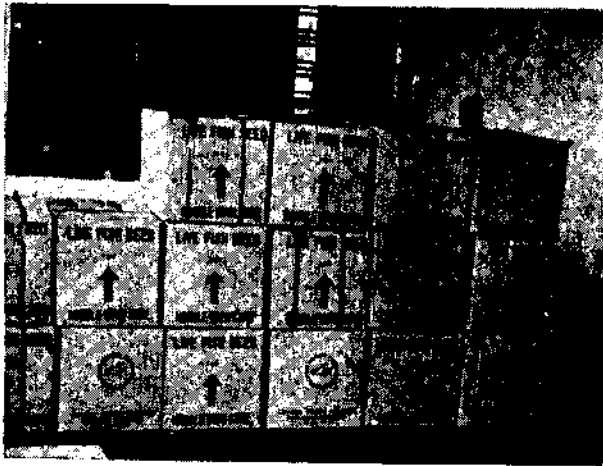
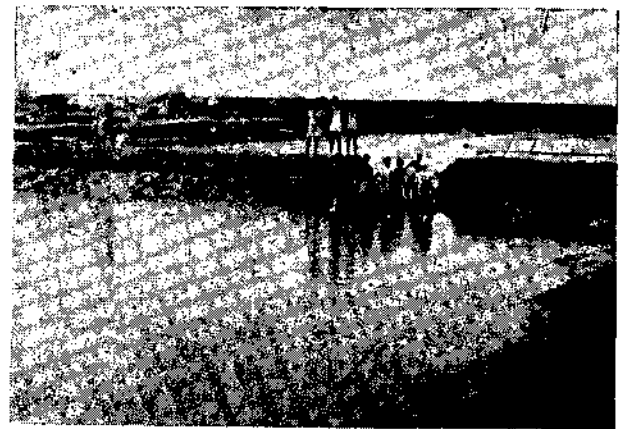


Fig. 1 Prawn seeds packed in polythene bags inside cardboard cartons ready for transport.

On 11-6-1980 a consignment of 70,000 postlarvae (50 cartons) and 5040 (12 cartons) of juveniles of *Penaeus indicus* reared at the NPCL were sent to M/S Ponrathnam and Balakrishnan of Tuticorin. 1400 postlarvae or 420 juveniles were packed in each polythene bag containing six litres of filtered brackishwater (salinity 15 ppt) and four litres of medically pure oxygen. The polythene bags were sealed airtight and packed in cardboard cartons (Fig. 1). The entire consignment was lifted from Narakkal at 1800 hours on 11-6-1980 and transported by commercial lorry service to Tuticorin. The cartons were opened at the pond site at 0800 hours on 12-6-1980 and the surviving seeds were released into the ponds without any acclimatisation procedures.

The culture ponds formed part of a salt pan reservoir situated on the southern bank of the Kallar river on the east coast 20 km north of Tuticorin (Figs. 2 and 3). The water supply to the ponds was through regular pumping from the estuary with the result the salinity of the water frequently became very high. At the time of stocking the salinity of the ponds was 45 ppt. The bags containing the seeds were secure and



Figs. 2 & 3 Ponds being prepared for the experiment

the mortality during transport which lasted only for 14 hours was 42% in the case of the post larvae and 17% in the juveniles. 40,000 post larvae (average size 12 mm) were stocked in pond 'A' which was 1.5 ha in extent and 4200 juveniles (average size 35 mm) were stocked in pond 'B' which was 0.3 ha in area. Before stocking, the ponds were fertilized with chicken dung, superphosphate and nitrate and were free of predatory fish. Regular monitoring of the hydrography of the ponds and sample measurements of the growing prawns were carried out.

Although the stocking was done abruptly without acclimatisation it would appear that fairly good number of post larvae survived as observations made on 20-6-1980 showed a large number of small prawns along the edges of the ponds. Periodically, supplementary feed consisting of chopped trash-fish, rice bran, prawn head meal and tapioca powder was given. Old water in the ponds was frequently allowed to flow out by gravity through concrete pipes protected by velon netting and new water pumped from the estuary by a 7.5 hp motor through inlet pipes covered by velon screens. The salinity in the ponds varied from 22.2 to 45.0 ppt and



Figs. 4 & 5 Prawn harvest

the temperature from 29.5 to 34.0°C. The depth of the water in the ponds was 50–70 cm. Harvesting was done on 12–11–1980 five months after stocking (Figs. 4 and 5).

Regular sampling showed fast growth in the first two months after stocking and thereafter the growth rate declined (Table 1). The growth rate of the postlarvae was relatively higher than that of the juveniles but at the time of harvest, those stocked as juveniles had attained a bigger size possibly due to the initial size advantage.

The details of final harvesting are given in Table 2. The yield obtained during the harvest has not been very encouraging. A higher stocking density and acclimation of the seed to the local conditions before stocking them in the ponds may have given better results. However, these experiments bring out interesting details regarding the survival of *P. indicus* in this highly saline environment. Of the 40,000 postlarvae stocked in pond 'A' only 9,180 survived after 5 months; this works out to a survival rate of only 23%. In pond 'B', however, where initial stocking was done with large sized juveniles the survival rate was better (47%). Although in the matter of survival and production these experiments are not very encouraging, they have established that the high saline reservoirs of salt pans could be utilized for prawn culture without interfering with normal salt production. It would also appear that in this particular type of environment stocking of prawn seed with higher initial size is beneficial resulting in better survival and product. It has also proved that the laboratory reared prawn seeds are robust enough to be transported to distant places and utilised for culture purposes. The NPCL is planning further experiments to get more information on transportation of prawn seed and culture of prawns in high saline media.

Table 1: Growth of *P. indicus* stocked in salt pan reservoirs—Tuticorin.

Date of Observation	No. of days after stocking	Pond 'A' (1.5 ha)			Pond 'B' (0.3 ha)		
		Average size mm	Growth increment mm	Growth rate per day mm	Average size mm	Growth increment mm	Growth rate per day mm
12- 6-'80	0	12	—	—	35	—	—
20- 6-'80	8	18	6	0.75	50	15	1.87
11- 7-'80	30	70	58	1.93	91	56	1.87
26- 7-'80	45	98	86	1.91	108	73	1.62
29- 8-'80	79	116	104	1.32	123	88	1.11
1-10-'80	112	125	113	1.01	137	102	0.91
12-11-'80	154	139	127	0.82	150	115	0.75

Table 2. Details of final harvesting of *P. indicus* stocked in salt pan reservoirs.

Pond	Quantity harvested (kg)	No. of prawns harvested	Av. size (mm)	Av. weight (g)	Production rate, kg/ha	Amount realised (Rs.)
A	179	9,180	139	19.5	120	3300.00
B	50	1,980	150	26.1	167	2000.00

